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New Third World Agricultural Competitors: The Growing Challenge

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A Research Paper

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September 1986*

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New Third World Agricultural Competitors: The Growing Challenge

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A Research Paper

This paper was prepared by [] the
Office of Global Issues. Comments and queries are
welcome and may be directed to the Chief,
Economics Division, OGI, []

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**New Third World
Agricultural Competitors:
The Growing Challenge**

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Summary

*Information available
as of 4 August 1986
was used in this report.*

The United States faces serious competition from LDC agricultural exports over the next decade. Structural change in the form of advances in agrotechnology and shifts to more market-oriented agricultural policies has transformed a few countries such as Brazil, Malaysia, and Thailand into major international suppliers of grain and other farm products in recent years, and we expect their strength to expand through 1990. Several other LDCs, including Argentina, India, and Indonesia, will probably join the ranks of serious, diversified agricultural exporters within the next five years.

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This new competition has mixed implications for US interests. On the one hand, strengthened LDC agricultural sectors will contribute to political stability in key Third World allies, facilitate LDC debt payments, and open new markets for US exports of agricultural support products such as farm machinery and agrochemicals. On the other hand, increased LDC agricultural exports are likely to:

- Result in even larger global surpluses than at present, keeping commodity prices—and US export earnings—depressed.
- Provide particularly strong competition in world grain markets, where the United States has already become a residual supplier of wheat.
- Intensify competition with the United States in markets for soybeans, poultry, cotton, rice, and orange juice.
- Strengthen the LDC voice in international negotiations on agricultural trade, which could complicate, as well as support, the attainment of US objectives in a new GATT round.

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Several factors indicate that expansion of LDC farm exports will probably continue. Most important, nearly all the new Third World agricultural competitors are efficient producers, relying little on production or export subsidies. Only in Brazil has such support played a major role in boosting export capacity. We believe that increased LDC competitiveness has stemmed primarily from sounder government policies offering stronger production incentives and from lower labor costs, more productive investments, and natural comparative advantage. As a result, governments of the new LDC competitors will probably be able to sustain an export drive by relying proportionately less on subsidies than more developed countries.

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Also boosting LDC agricultural export prospects is agrotechnology. While several of the new LDC competitors have been using high-yielding varieties of grain and advanced farm inputs, most have improved their productivity without substantially relying on the products of agricultural research. The untapped potential for enhanced output through increased funding and adoption of new technology is thus considerable. Even more effective application of traditional farming methods will substantially improve productivity in some LDCs.

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We believe that additional LDCs could become serious agricultural competitors in the 1990s. Although overall agricultural prospects in Africa and Latin America are not good, selected countries—including some in hard-pressed regions—will make advances in exporting certain commodities. Colombia, Zimbabwe, and Pakistan could achieve strong growth in exports of several products if they follow relatively market-oriented policies and exploit new farming techniques. Other potential successes include cotton in Panama, palm oil in Papua New Guinea, and barley in Tunisia. Many of these countries, however, will have to minimize domestic instability and deal with the politically explosive issue of land reform.

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**New Third World
Agricultural Competitors:
The Growing Challenge**

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Scope Note

This research paper is part of a broader effort by the Directorate of Intelligence to assess the implications for the United States of structural change in the Third World. It examines the substantial transformation in agricultural policies and technologies that has occurred in six LDCs that have systematically expanded their agricultural exports. The paper then suggests how continued productivity advances by these and other LDCs not only could benefit the economic and political fortunes of important Third World US allies, but also could threaten to intensify worldwide agricultural competition and damage US interests.

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New Third World Agricultural Competitors: The Growing Challenge

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Introduction

A surge in Third World agricultural production over the past decade has helped to seriously weaken international commodity markets. Whereas key developing countries accounted for about 9 percent of world agricultural exports in 1975, by 1984 they were responsible for 15 percent. Some LDCs already have the potential to add massive amounts to the world supply of certain commodities, such as soybeans, palm oil, rubber, and rice. Moreover, despite the continued glut plaguing agricultural trade, several other countries show promise of substantially expanding their export capacity within the next decade.

Six LDCs in particular have emerged as serious agricultural competitors. In spite of the weak commodity prices of the 1980s, they have managed to enter the top ranks of exporters by skillfully combining their comparative advantages with sound, market-oriented policies and, in many cases, the introduction of new agrotechnologies. Highly efficient producers in most cases, all have seen their exports grow dramatically—by 1984 approximating 20 percent of total agricultural exports from the Third World:

- **Brazil**—currently the world's second-largest agricultural exporter behind the United States—since 1975 has achieved dramatic growth in soybean, citrus, and livestock production for export.
- **Malaysian** palm oil production could top 4.8 million metric tons this year, nearly four times the 1975 level. Similarly, subsidized inputs and new varieties have enabled Malaysia to rise from the world's tenth-largest cocoa bean producer in 1978 to sixth in 1985.
- **Thailand's** success in multiple rice cropping has enabled it to become the world's largest rice exporter, with production rising from 10 million tons in 1975 to 13 million last year. Rubber production also doubled in the past decade, reaching 720,000 tons in 1985.

- **Indonesia** has moved from being the world's largest rice importer to self-sufficiency in just 10 years. According to USDA, 1986 rice production will probably reach a record 39.4 million tons, creating a surplus of over 2 million tons.

- **India's** wheat production has increased from only 24 million tons in 1975 to 45 million tons last year. Because of large stocks resulting from heavy imports in prior years and this year's record production, India hopes to export approximately 2 million tons in 1986.

- **Argentina** instituted production incentives that have dramatically boosted wheat output. Export tonnages correspondingly jumped from 3 million tons in 1975 to consistently over 8 million tons in the 1980s.

Keys to Success

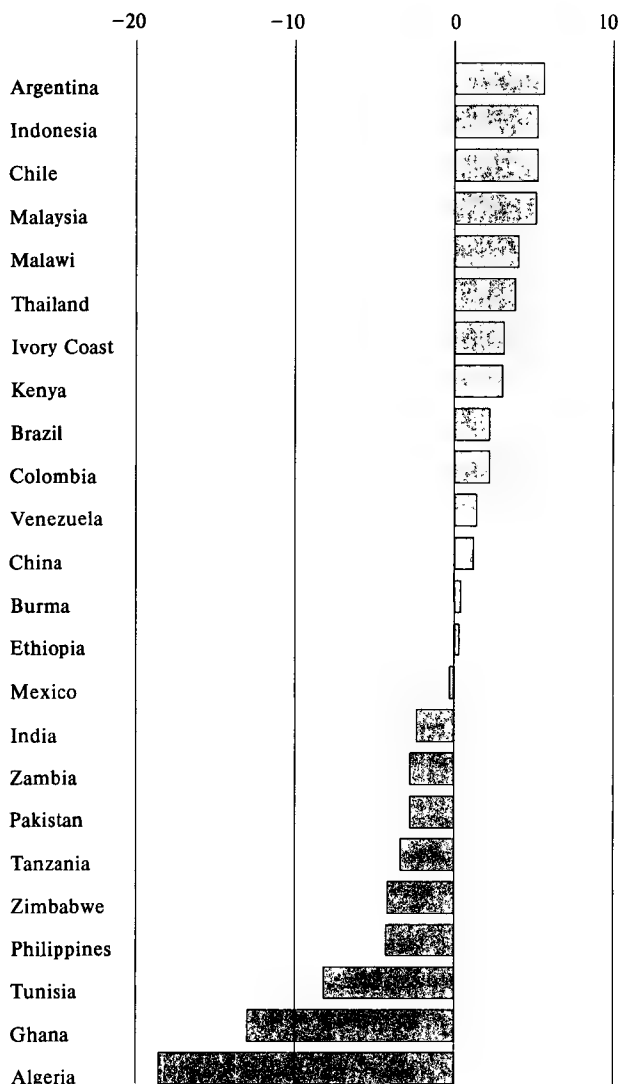
While many LDCs have made attempts at reform, the six new Third World agricultural competitors have systematically reduced disincentives and, in many cases, introduced new technologies to increase production. The stunning success of these countries in boosting their agricultural exports has stemmed primarily from continued productivity gains from agrotechnology and from a shift in government policy toward favoring market incentives. Of the two, changes in agricultural policies have been the most critical, since new agrotechnologies have not been widely adopted where appropriate producer incentives have been lacking. To a lesser extent, the presence or absence of land reform, political stability, and advantageous natural resources have also played a role in forming the new competition.

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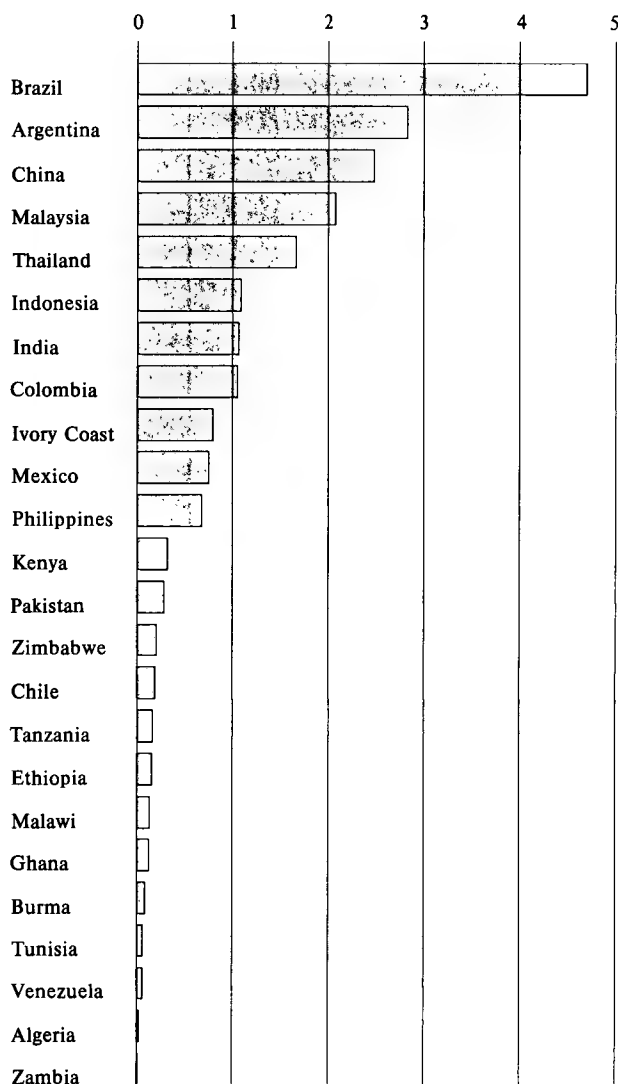
Figure 1
LDC Agricultural Export Performance

Note change of scale

Export Growth Rate, 1975-84^a
 Percent



Real Export Earnings, 1984
 Billion US \$



^a Compound annual growth rate adjusted for inflation.

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Table 1
Keys to Success

	Prices and Market Structure	Subsidies and Taxes	Agrotechnology	Natural Resources	Land Reform	Security
Brazil		●		●	●	●
Malaysia	●	●	●	●		●
Thailand	●		●	●		●
Indonesia	●	●	●			●
India		●	●			
Argentina		●		●		

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Government-Backed Incentives

Governments in each of the six LDCs have changed their agricultural policies in the past decade in ways that have directly and indirectly increased the incentives for farmers to produce for export. The new policies have included favorable producer prices, subsidies on inputs such as seeds and fertilizer, producer credit, liberal financing of land purchases, tax incentives, export subsidies, and currency devaluation.

Prices and Marketing Structure. The successful LDCs have generally pushed market incentives favoring export promotion over domestic food supply, abandoning their previous practice of taxing agriculture to support industrial development and subsidizing food consumption by keeping producer prices low. Driven largely by hard currency needs, several LDCs have used currency devaluations to successfully encourage increased agricultural production and export development. Agricultural pricing policies—geared to expand the output of export products by offering farmers a good profit on their crops—have been particularly important in Malaysia and Thailand. Similarly, according to Embassy reports, Indonesian commodity floor prices have helped to encourage palm oil and rice production. Most of the six LDCs also have improved their transportation and storage facilities and made their marketing mechanisms more efficient. Ineffective state marketing boards have been dismantled and replaced with farmer co-ops and private trading firms.

Subsidies and Taxes. In addition to pricing and marketing policies, some new competitors provide direct export incentives, including differential tax rates and rebates, marketing board assistance, and freight subsidies:

- Brazil, for example, uses differential export taxes to promote the export of value-added products such as soybean meal, soybean oil, and orange juice.
- Malaysia uses lower export taxes and subsidized export financing to encourage exports of palm oil, rather than palm kernels.
- Indonesia uses subsidies on seed, fertilizer, and pesticides to promote surplus production for export.

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Despite the proliferation of subsidies generally among LDCs (see appendix B), we judge that subsidies have not played a major role in the export success of the new competitors except for Brazil (see inset). So-called LDC production aids—price support programs, the provision of inputs at less-than-market value, and low-cost production loans—are widespread, and have clearly affected the level of Third World agricultural supplies available for export. According to Embassy reporting, however, among the leading six exporters:

- Rice is the only commodity to be subsidized by the federal government in Malaysia, which remains a net rice importer.

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Confidential**Brazil's Agricultural Export Incentives**

The basic goal of Brazil's trade policy is to maximize its trade surplus. A combination of import restrictions and export promotion—utilizing in many cases subsidized production credits and differential export taxes—has enabled Brazil to shift its global trade balance from a \$2.8 billion deficit in 1979 to a \$12.4 billion surplus in 1985.

While Brazil's agricultural sector has strongly reacted to the international price and market signals for most export commodities, Brasilia has made extensive use of tax and credit systems to improve its export competitiveness:

- *Central Ban Resolutions 71, 296, 674, and CIC-CREGE 14-11 offer subsidized interest rates for reexport loan programs.*
- *State value-added tax (ICM) provides differential export taxes for soybeans and orange juice that favor value-added exports.*
- *The 11-percent Federal Industrial Products Tax (IPI) is rebated to exporters.*

For soybeans, government incentives include tax exemptions and deductions on exports of meal and oil, subsidized financing to cover crushers' operating expenses, and restrictions on soybean imports. While the extent of these subsidies has not been measured, competitors have complained that these practices allow Brazil to export soybean meal and oil at a discount to international prices.

Many of these Brazilian export incentives—such as the IPI and CIC-CREGE—have been very sharply reduced or phased out altogether. New ones are, in some cases, replacing them—subsidies paid directly to exporters to allay freight costs totaled \$20 million in 1985. The largest subsidies, however, are used to stimulate domestic production of food crops, not exports. For example, this year's budget allocates \$2.5 billion for planting credits of which the domestic wheat industry alone receives \$1 billion.

- In Indonesia, the major producer subsidy to agriculture is for fertilizer, with minor subsidies for insecticides and herbicides. For 1986-87, Jakarta has budgeted a 20-percent increase in fertilizer subsidies.
- Argentina's primary incentive for encouraging the export of high-value goods is the cash export reimbursement called a *reembolso*. This has been used primarily for exports of vegetable oil, leather goods, and apple juice. Argentina does not subsidize its wheat exports but does discount its posted market prices in order to sell its surpluses.
- In Thailand, subsidies have played virtually no role. The price of rice in the domestic market has traditionally been kept below the world price by an export tax called the rice premium. To promote greater rice exports, however, this tax has recently been eliminated.
- India has made great strides in export development without substantial outlays for agricultural subsidies, according to press and trade reports.

The case of Brazil is more complex. A World Bank study found that Brazil, in fact, taxes agricultural exports and that actual net subsidies—ranging from 9 to 25 percent—are given only to semiprocessed products such as soybean oil. According to studies by the Office of the US Trade Representative, however, Brazilian poultry exports have clearly benefited from an undetermined level of subsidy, as, to a lesser extent, have exports of soybean products.

In response to US petitions detailing unfair trade practices in these product areas, Brazil has scaled back many of its subsidy programs. According to press reports, the government of President Jose Sarney has also had to cut its export subsidies in response to IMF adjustment programs and is attempting to replace these incentives with government-guaranteed private bank financing of exports.

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Confidential**Technology**

The dramatic growth in LDC agricultural production has been underpinned by the coming to fruition of the Green Revolution of the 1970s. Better agricultural chemicals, greater use of irrigation, and high-yield seed varieties have steadily raised crop yields throughout the past three decades and have provided farmers in the six leading LDC exporters with the tools to respond to the changes in agricultural policy climate:

- Brazil, according to USDA, is introducing a less-daylight-sensitive soybean variety—which might permit planting to expand northward—and improved pesticide and fertilizer application techniques.
- Successful tissue culture experiments in Malaysia have dramatically raised rubber and palm oil yields: researchers can produce as many as 20,000 identical seedlings from a single high-yield parent, according to Embassy reports.
- Thai agricultural reforms under the current five-year-plan period (1982-86) have included strong promotion of high-yield seeds and more productive cropping patterns.
- Chemical partitioning agents—which channel plant energy between metabolic requirements and storage needs—have successfully boosted yields in cotton and soybeans in Asian and South American research centers, according to press reports.
- Indian foodgrain production—especially rice and wheat—has attained increased stability because of greater use of inputs, improved cultivation techniques, and better water management practices.

Further sizable production increases from agrotechnology appear likely among a number of LDCs. As new technologies such as growth hormones and new hybrid seeds become more affordable and more widespread, more Third World countries will have an opportunity to increase their agricultural potential despite limitations of soil and climate. Much of West Africa, for example, could become self-sufficient in rice by shifting from upland to swampland production, according to State Department analysis. The shift will require different rice varieties, fertilizer, and pesticides, and effective swamp drainage.

Genetic engineering offers the possibility of tailoring plants for greater adaptability to adverse Third World growing conditions; for example, agricultural potential can be increased with drought-resistant cereals and, for coastal marshes, salt-tolerant rice. Recombinant DNA and growth regulators offer the potential to raise crop yields through improved nitrogen fixation, disease resistance, and shortened growing time. Through genetic manipulation of nitrogen-fixing bacteria, for example, plants will be able to create their own fertilizer. According to [redacted] press reports, research currently under way in these areas is likely to yield commercially applicable seeds and technology within the next 10 to 15 years. [redacted]

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In the near term, however, opportunities for increased LDC agricultural production from technology will come primarily from soil management and cropping systems, rather than genetic engineering. The more advanced technological breakthroughs of the Green Revolution are being absorbed slowly and in relatively few countries. Although India, Malaysia, and Thailand have been particularly active in introducing agrotechnologies, many other LDCs have not undertaken major efforts to develop or implement them. Greater attention to more basic farming methods is likely to have a stronger impact on productivity in the next few years. [redacted]

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Natural Resources

A combination of fertile soil, good climate, and long growing season have provided some—but not all—new Third World agricultural competitors with enormous production potential. The successful exporters, nonetheless, have all concentrated on the production and export of products in which they have a comparative advantage. For example, Argentina has taken advantage of its rich farmland and conducive climate to become the fifth-largest wheat exporter. While domestic and foreign debt—estimated at over \$40 billion—will limit opportunities for agricultural development in the next few years, Argentina's wheat production potential is enormous. Wheat yields, for example, stand at only 1.6 tons per hectare, about 40 percent below current US levels. Similarly, ideal growing conditions and long crop seasons have helped Malaysia and Thailand to triple their exports of tree crops, such as palm oil and rubber, since 1975. [redacted]

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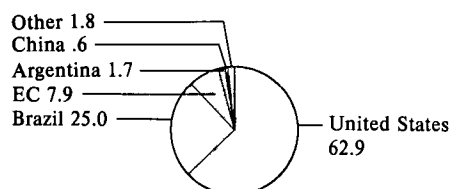
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Figure 2
Export Market Share in Selected Commodities

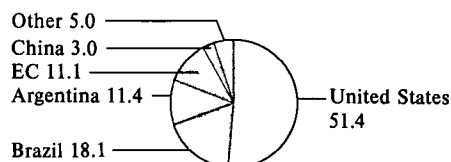
Percent

Soybeans and Products

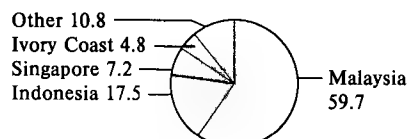
1975/76



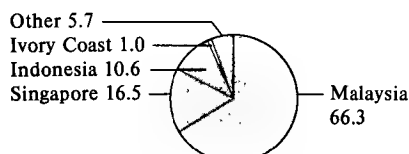
1985/86

**Palm Oil**

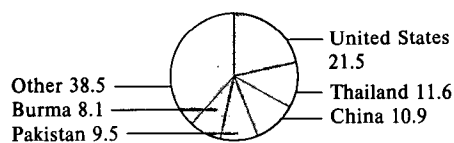
1975/76



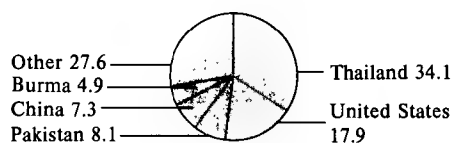
1985/86

**Rice**

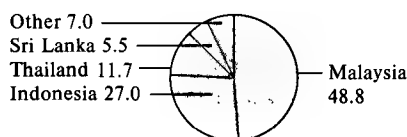
1975/76



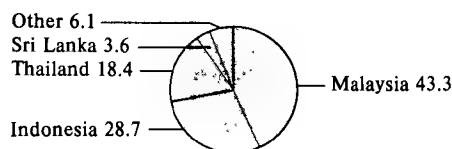
1985/86

**Rubber**

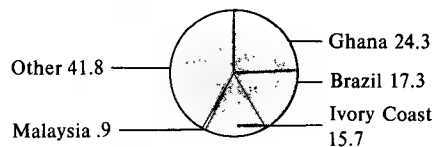
1975/76



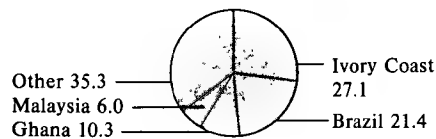
1985/86

**Cocoa**

1975/76



1985/86



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Confidential**Land Reform**

Although land tenure reform policies pursued by several LDC governments have played a major role in raising agricultural productivity, they have not been employed by most of the six leading exporters. In general, movement toward individual ownership of land—such as China's new "responsibility system"—has proved to be an effective production incentive. Land reform, however, is usually an explosive social and political issue. In Brazil, President Sarney's promises to enact land reform have made squatters bold, and rural violence is rising in several states as landowners react. Sarney's four-year plan targets 1.4 million agricultural families for land redistribution and titling, ensuring further unrest. []

Security

The absence of prolonged political unrest or pervasive guerrilla activities has helped some, but not all, of the new competitors. Where farmers have been faced with life-threatening situations and the seizure of their crops, they have been unable or unwilling to produce much more than required to meet their immediate needs. Besides disrupting the agricultural production cycle from planting to harvest, sustained disturbances in many LDCs have interrupted normal marketing channels and affected seasonal planting decisions. Brazil and India have had relatively few security problems. On the other hand, some Third World agricultural competitors continue to face political obstacles. For example, despite Argentina's vast potential, farmers have reacted to political instability and high inflation by adopting low-risk crop and cattle rotations and low-cost technology, hindering further export gains. In the Indonesian province of East Timor, farmers face a continuous security threat from guerrillas and consequently are not allowed to farm more than 2 to 5 kilometers from their villages, which restricts the already limited amount of land available for production. []

Outlook

The experience of the six leading LDC agricultural exporters is likely to be repeated to some extent by several other Third World countries over the next decade. Should those other LDCs follow some of the

same steps taken by the current major LDC competitors with respect to introducing new agrotechnologies and implementing policies favoring market incentives, they could capture portions of the world market for certain commodities. While most of these countries are not likely to become major exporters in the near term, the cumulative impact of their exports on existing surplus world supplies could be significant. []

We believe continued growth in LDC agricultural exports is assured by several factors. Many LDCs, despite intentions to diversify their export base into manufactures, have discovered that investment in agriculture requires less capital and time to generate export revenue than in higher-value-added industries. The successes of market-oriented agricultural export programs, moreover, are becoming well-documented and are likely to become models for LDCs that have fared poorly under state-run systems. On the technology side, opportunities for great increases in yields are still plentiful through the application of modern but conventional farming techniques, while genetic engineering has the longer term potential to revolutionize LDC farming. []

As the push for hard currency earnings forces LDCs to diversify their agricultural export base, several are already moving into new commodity markets. The production is generally localized, highly subsidized, and targeted for a specific export market. Examples include cotton in Panama, Zimbabwe, Sudan, and Pakistan, and palm oil in Papua New Guinea, Colombia, and Ivory Coast. Other commodities and countries to watch include corn in Colombia, barley in Tunisia, rice in India, and grain in some African LDCs. In Africa, for example:

- Kenya's export success has been due to policies that have ensured strong price incentives and good extension services to farmers.
- Malawi price incentives and marketing board reforms have boosted maize and cotton production.
- Zimbabwe has succeeded with surplus crops exported from large (400 hectare minimum) commercial farms with access to capital and new technology.

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Where the Situation is Not Bright

While the successful export development of Brazil, Malaysia, and Thailand may be replicated in at least some of the emerging exporters, prospects in much of Africa and Latin America are not good. Governments in most African nations, which rely heavily on cash crops to earn foreign exchange, have not provided adequate infrastructure and producer incentives and have pursued inconsistent export policies. In Ghana and Nigeria, for example, misguided agricultural policies have reversed formerly strong export positions in a number of commodities. Moreover, an adverse climate and poor cropping techniques have greatly hindered agricultural development in many African countries—especially in the Sahel. []

Although a few countries such as Kenya, Malawi, and Zimbabwe have expanded some agricultural exports by stressing market orientation, service, and technology, such success will be difficult to repeat elsewhere in Africa because of the long history of tribal, subsistence farming. In West African countries, an upturn in long-term agricultural prospects will hinge on a reversal of climatic trends; more widespread adoption of small-scale, low-cost agro-technologies; and more rational producer incentives. []

In South and Central America, the implementation of more consistent agricultural policies and technologies will continue to be constrained by political instability, tight government budgets, and overvalued exchange rates. Terrorist activities, widespread corruption, smuggling, and frequent investment and export policy changes will continue to inhibit the efficient marketing, processing, and export of agricultural commodities. These problems are particularly acute in Colombia, Peru, Bolivia, and El Salvador. []

Most LDCs, however, will probably remain marginal agricultural exporters at best (see inset). Although increasing numbers of LDCs will become more self-sufficient in food production, few are likely to come

up with the combination of natural resources, market incentives, greatly improved technology, and other factors that have produced such world competitors as Brazil and Argentina. []

Implications

If even a small number of LDCs substantially expand their agricultural export capacity, the additional competition in world markets could have mixed implications for US interests. Continued export expansion by these countries and declining imports by greater numbers of self-sufficient LDCs will mean greater surpluses in world markets—especially for tree crops, wheat, soybeans, rice, cotton, and vegetable oils. Indeed, the steady growth of exports from the six new LDC competitors alone will burden already oversupplied world markets, leading to a continuation of low prices and more intense competition for shrinking market shares. As a result:

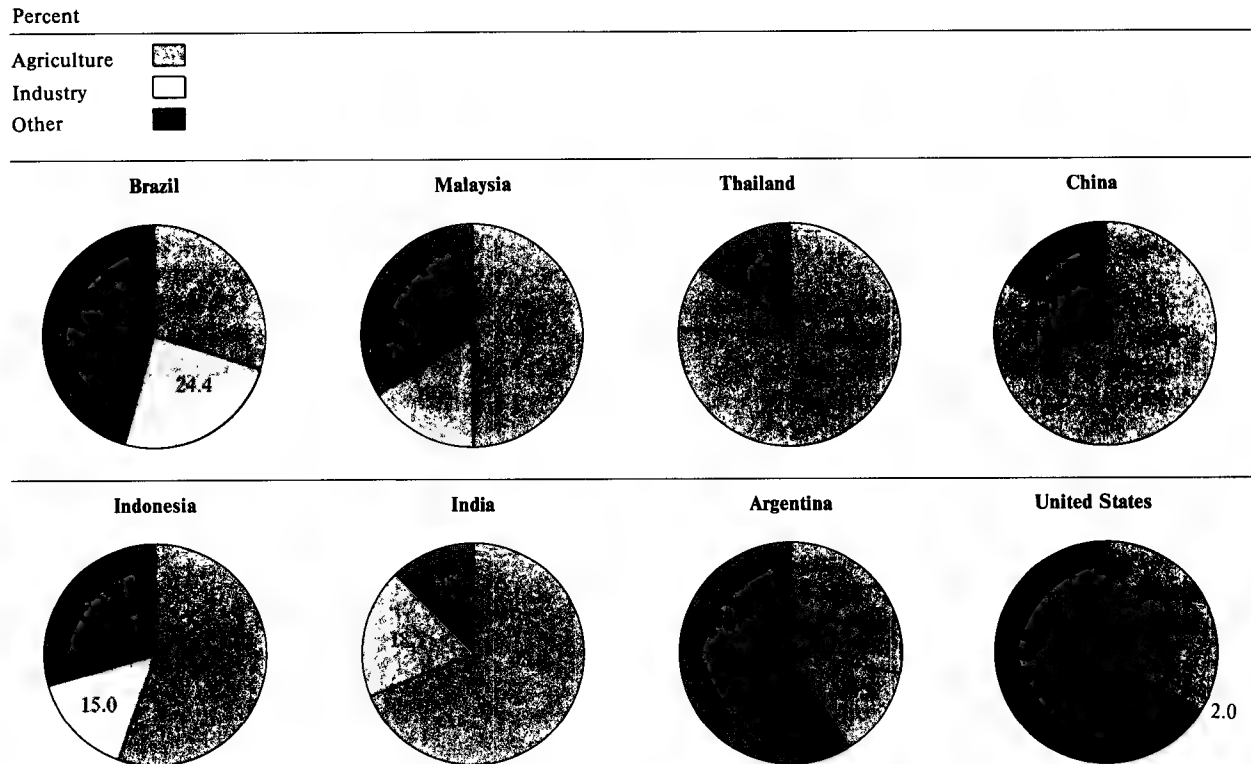
- Competition in US overseas markets for poultry and orange juice will intensify; the Brazilian Broiler Exporters Association, for example, recently announced a \$1 million package to diversify foreign markets by promoting Brazilian poultry in Japan, the European Community (EC), and West Africa.
- Export competition against the United States will also be stiff in soybeans, wheat, rice, and vegetable oil.
- Other US export markets may come under assault as emerging exporters in Africa, Latin America, and Asia achieve successes on a more limited scale.

[]

Competition among LDCs themselves will probably intensify. With sustained pressures to generate hard currency earnings, LDCs will be forced to undercut competitors' prices and to adopt even more aggressive market promotion policies. As buyers lacking adequate foreign exchange, they will be pressured to arrange barter deals, often based on political ties rather than market forces. []

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Figure 3
Share of Labor Force in Agriculture, 1980



Source: World Bank.

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Such intense competition could create serious trade tensions among important US allies in the Third World. For example, Malaysia and Indonesia both export rubber, palm oil, and timber. Indonesia has cheaper labor and more suitable undeveloped land, as compared with Malaysia's superior infrastructure and processing facilities. Although Malaysia has bested Indonesia in the export market, its competitive edge is eroding, and Embassy reporting indicates that in the 1990s Indonesia may overtake Malaysia in the production and export of palm oil and rubber. Recent

bilateral talks aimed at easing disagreements over commodity exports accomplished little, and trade tensions are likely to intensify.

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This competitive environment is likely to hinder as well as help US efforts in the new round of GATT negotiations. Should agricultural trade restrictions be considered in depth by GATT for the first time, some LDCs seeking market access, such as Thailand, are likely to join the United States in pressing for lower

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EC and Japanese tariffs and nontariff barriers. Countries in Africa, the Caribbean, and the Pacific, however, have special trading agreements with the EC and will be reluctant to alter the status quo, as will some leading LDC competitors such as Brazil and Malaysia. Given these counteracting positions, we do not expect the LDCs to be major contributors to resolving the issue of nontariff trade barriers, which have hindered US gains in foreign markets. []

Opportunities

On the positive side, stronger commodity export positions by key Third World countries such as Brazil and Thailand are likely to pay economic and political dividends to the United States over the long run. Continued export gains will be needed in these countries to cushion the impact of IMF-mandated compliance programs and to compensate for private lending cutbacks in the industrial sector. Moreover, with up to two-thirds of some LDC populations engaged in farming, strong and expanding agricultural sectors will also be needed to help preserve political stability and

to maintain the viability of newly installed democratic, civilian governments. This will probably be the case, for example, in Argentina, Brazil, and Uruguay. []

Stronger agricultural growth in the Third World should also provide considerable benefits to US agribusiness firms. Opportunities for US exports of seeds, fertilizers, pesticides, farm equipment, and even complete processing plants are likely to present themselves in the face of expanding LDC agricultural production—offsetting to some degree US losses in primary commodity trade. For example, Zimbabwe and Brazil are strong potential markets for US seeds and farm machinery, while Colombia and Pakistan will probably purchase US fertilizer as part of their efforts to boost grain yields. []

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Appendix A

The Top Three LDC Competitors

The benefits from changes in agricultural policy and new agrotechnology have had a particularly striking impact on Brazil, Malaysia, and Thailand. The three countries have led the surge in agricultural exports, with export volume for several key Third World commodities more than doubling over the past 10 years (see table 2). []

Brazil: Already an Agricultural Superpower

Brazil, the world's second-largest agricultural exporter behind the United States, has boosted export earnings in the past decade through implementing tax breaks, subsidized credits, and input subsidies. It has also taken advantage of changing market trends and rapidly diversified into processed agricultural products. After a decadelong development drive, lucrative Brazilian export crops now include soybeans, soy products, poultry, and orange juice. []

Soy products. Brazil's push in the soy sector has met with particular success: Brazil surpassed Argentina in 1984 to become the second-largest exporter of soybeans after the United States. While its drought-reduced soybean production in 1985 is estimated [] at only about 13 million tons, reducing earnings by \$700 million, Brazil's aggressive export pricing is expected to continue to boost its sales over those of the United States and other Western exporters. [] although Brazilian production costs are similar to those in the United States, Brazil stands ready to undercut US soybean prices by \$18 to \$20 per ton to assure a significant export market in 1986. According to Embassy officials, Brazilian soybean production may reach 21 million tons by 1990, making Brazil the world's second-largest producer. At current prices, this could add \$180 million to export earnings. []

Citrus. Prospects for future Brazilian export gains are especially good in citrus. Citrus—primarily orange juice—exports have grown even more rapidly than soybeans and have become Brazil's seventh-largest source of foreign exchange. The USDA estimates

Table 2
New Third World Agricultural Competitors: Production and Exports of Selected Commodities

Thousand metric tons

	1975/76	1985/86
Brazil		
Soybean		
Production	9,892	13,400
Exports	3,516	1,300
Soybean meal		
Exports	4,078	7,450
Soybean oil		
Exports	430	600
Frozen concentrated orange juice		
Production	211	771
Exports	181	730
Poultry		
Production	569	1,590
Exports	71	251
Malaysia		
Palm oil		
Production	1,258	4,730
Exports	1,160	4,108
Cocoa		
Production	15	120
Exports	14	110
Thailand		
Rice (milled)		
Production	10,098	12,705
Exports	933	4,200
Rubber		
Production	355	720
Exports	342	648

Source: USDA/FAS

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1985 earnings at \$753 million, up from \$339 million in 1980. Brazil's citrus expansion has been especially well timed, since the US industry in Florida has been damaged by consecutive poor crops. Despite lower world prices, substantial Brazilian exports, expected as a result of Florida's frost-induced production problems, mean Brazil's 1986 export earnings will once again top \$730 million. []

Poultry. Brazilian production grew quickly in the 1970s as large integrated poultry systems replaced outdated, labor-intensive barnyard operations. According to trade and press reports, low-interest agricultural loans to farmers, subsidized poultry feed, and bulk rate freight savings have all contributed to expansion of Brazilian poultry exports since 1979. Earnings peaked at over \$350 million in 1981 and have consistently topped \$250 million since then. Brazilian poultry producers are currently among the most efficient in the world, according to industry reports, with a price advantage of between 40 and 45 percent over other exporters. Seizing on new market opportunities, Brazil now dominates the lucrative Middle East poultry market, and it is encroaching on US markets for chicken parts in Japan, Singapore, and Hong Kong. []

Malaysia: Building on Advantages in Tree Crops

Malaysia's agricultural success is largely due, in our view, to a rich endowment of natural resources and government policies to encourage investment, technological innovation, and specialization. Malaysia has built on its strong comparative advantage in producing tropical tree crops—especially rubber, palm oil, and cocoa—on large, efficiently managed estates for export markets. Output of these crops is rising and Malaysia's share of world trade is increasing. Like Brazil, Malaysia has reacted quickly to changing international economic conditions and is likely to continue to emphasize improved productivity to maintain international competitiveness in agricultural exports. []

Palm Oil. The palm oil sector has led the surge in exports. Compared with only 1.3 million tons in 1975, Malaysian palm oil production could top 4.8 million in 1986, according to industry reports, while export earnings could reach about \$1 billion. Malaysian

price and investment incentives have been a particular boon to the production and export of palm oil and cocoa. To encourage value-added palm exports, processed palm oil exports are exempt from the 15- to 30-percent export duty on palm kernels, amounting to an average subsidy of \$180 million per year to the Malaysian processed palm oil industry. As an additional incentive, refined palm products are eligible for the new National Bank Export Finance Scheme, which provides exporters funds for seeds, fertilizer, and pesticides to improve crop yields. []

Seizing on palm oil's price advantage over soybean oil, Malaysia has vigorously promoted palm oil exports. In addition to official trade missions and market promotion tours by the state-owned Palm Oil Research Institute of Malaysia (PORIM), high-level delegations from Kuala Lumpur have traveled to Iran, India, and Egypt. According to USDA, these trips have successfully set up joint ventures to sell palm oil in China and Egypt, and stimulated direct purchases from Pakistan. []

The future for Malaysian palm oil exports is bright. According to [] USDA, production estimates for Malaysian palm oil range between 5.4 and 6.7 million tons by 1990, assuring that Malaysia will remain the largest US competitor in world vegetable oil markets. Generous tax incentives for producers and processors and a new National Export Council are likely to spur expansion of palm oil exports into major markets in India, Pakistan, Japan, Africa, and the USSR. []

Cocoa. Malaysian cocoa production and exports also have responded well to research advances and producer incentives. The Malaysian Agricultural Research and Development Institute (MARDI) continues to make progress in cocoa research, specifically the development of five new high-yielding cocoa clones. Kuala Lumpur provides incentives to small farmers in the form of fertilizers, pesticides, and planting materials. These subsidized inputs and new varieties have enabled Malaysia to rise from the world's tenth-largest producer of cocoa beans in 1978 to sixth in

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1985. Extensive areas planted in the mid-1970s have now reached peak productive age, and, with another 40,000 hectares coming into maturity, USDA predicts exports of cocoa beans will probably reach a record 125,000 tons in 1986/87. []

Thailand: Gains in Rice and Rubber

Thailand's comparative advantage in agriculture comes from its favorable climate and abundance of fertile land. Dependent mainly on rice twenty years ago, Thai farmers have responded to price signals and diversified into a variety of other crops. As a result, Thailand now exports large quantities of corn, tapioca, and rubber, as well as rice. []

Rice. Thai rice farmers have been particularly responsive to market signals, making long-term switches in cropping patterns in reaction to the relative attractiveness of commodity prices. For example, in several areas two and sometimes three rice crops are now harvested per year to produce surplus for export. To encourage even greater productivity, Bangkok is providing low-cost inputs such as fertilizer to farmers. []

As a result of these initiatives, Thailand has become the world's number-one rice exporter, and production has risen from 10 million tons in 1975 to 13 million in 1985. To further boost its export competitiveness, Bangkok in January 1986 abolished the longstanding export tax on rice. Price discounting and recent improvements in Thai rice processing have facilitated Thai penetration of traditional US markets in Europe, the Middle East, and Africa. However, recent US legislation designed to enable US rice exporters to compete in world markets will cut into Thai sales this year by about 500,000 tons, according to USDA estimates. []

We believe Thailand will remain a major competitor in rice by moving away from traditional cultivation techniques into yield-improving technologies. According to USDA, Thailand could boost yields by as much as 150 percent with regular fertilizer use. In addition, the use of appropriate equipment for row-seeding and inter-row cultivation has the potential to greatly increase productivity and export potential. []

Rubber. Thailand has become the third-largest exporter of rubber behind Malaysia and Indonesia. Production has jumped from 355,000 tons in 1975 to 720,000 tons in 1985, according to State Department reporting. This was achieved by expanded plantings, replacing aged stands with new high-yielding clones, and using more sophisticated tapping and processing techniques. Lower production costs and improved quality are making Thai rubber even more competitive. As a result, export revenues topped \$670 million for 1985, up from \$511 million in 1983. []

Recent efforts to make Thai rubber more competitive include government-sponsored consolidation of small holdings into "mini-states" to increase yields and thereby offset the advantages of lower wages and higher productivity in neighboring Malaysia. This effort, combined with a dynamic natural rubber replanting program and new high-yield planting materials, could boost exports in the next few years to between 700,000 and 800,000 tons, according to USDA. For export earnings, this would mean an increase of nearly \$100 million, even at current low prices. []

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Appendix B

Snapshot of LDC Agriculture

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Snapshot of LDC Agriculture

	Agricultural Export Crops	Transportation/ Storage	Marketing Boards	Export Incentives	Agricultural Research	Agricultural Reform
Africa						
Algeria	Dates, potatoes, citrus	Inadequate	Various ministries and marketing boards	Tax exemptions to encourage investment in agriculture; liberalization of marketing and pricing	Attempting to build national capability for agricultural research	Current five-year plan encourages agricultural development; land to be redistributed to small farmers
Ethiopia	Coffee, oil-seeds	Inadequate; two all-weather roads, two ports, one railway	Government attempts to control grain and coffee trade are strictly enforced but inefficient	Proposals to improve grain marketing; strong disincentives to foreign investment persist	Insufficient; need to focus on modern farming methods as well as improved varieties	Ambitious 10-year development program begun in 1984 has little chance of success; agriculture crippled by drought and poor pricing policies
Ghana	Cocoa, timber	Inadequate	Ineffective and costly; by law, all cocoa, coffee, and nuts must be sold to state marketing boards, but low returns to farmers have led to widespread smuggling	Bleak outlook despite improved producer price incentives	Insufficient	New Economic Recovery Program under study to improve incentives and decrease government involvement
Ivory Coast	Coffee, cocoa, timber	Inadequate	Various marketing boards inefficient because of lack of centralized authority	Export subsidies may be extended to agriculture with emphasis on palm oil and rubber	Funding ample by African standards, but still inadequate	Guaranteed producer prices are far below market prices; subsidized inputs offer little incentive
Kenya	Coffee, tea, sisal, cotton, livestock	Task force set up to solve logistic problems, but severe transportation problems remain; new building program under way in deficient storage areas	Government still heavily involved in grain marketing through costly, inefficient parastatals	Excessive redtape thwarts the expansion of liberalized trade	Research efforts hampered by limited natural resource base and fragile environment	Favorable producer prices for coffee and tea provide up to 80 percent of market prices; remaining disincentives include poor access to farm credit and no land reform
Tanzania	Coffee, cotton, sisal	Rudimentary; major bottlenecks persist despite some rehabilitation of railroads	Extensive co-ops reintroduced; parallel market for foodcrops due to inefficiency of system	Increased producer prices, but not enough to spur production; no cohesive foreign investment policy	Very little; limited to outside sources	Two economic reform packages announced; little success expected

Snapshot of LDC Agriculture (continued)

	Agricultural Export Crops	Transportation/ Storage	Marketing Boards	Export Incentives	Agricultural Research	Agricultural Reform
Tunisia	Olive oil, citrus, dates	Inadequate, but slowly expanding grain storage	Numerous marketing boards are still poorly managed	Very limited; trade and investor agreements with Libya, Algeria, China	25 large agriculture projects focus on soil analysis and high-yield varieties	Promotion of countertrade, irrigation projects, limited land reform
Zambia	Tobacco, cotton, horticultural crops	Inadequate and located far from buying centers	103 boards and co-ops are inefficient and heavily subsidized	Income tax exemptions, favorable export tariff rates	Focus on agronomy and new crop varieties; shortage of money and qualified staff	Considering land reform and marketing board reform
Zimbabwe	Tobacco, maize, cotton	Recent construction of 24 marketing and distribution depots will ease bottlenecks	Farmers sell maize, cotton, and sugar to state marketing boards at fixed national prices	Five-year focus on improving crop prices combined with access to extension, credit, and research facilities	Research plan reoriented toward needs of the small-scale producer	15-year land reform package under discussion; more input loans now available
South America						
Argentina	Wheat, meat, oilseeds, corn	Outdated infrastructure in need of repair; reconstruction of damaged Bahia Blanca port will ease problems	Marketing boards sell all major agricultural exports	Aggressive export pricing; modest reductions in export taxes	Lacks funding	Overvalued peso; reform of export incentives needed
Brazil	Coffee, soya, sugar, citrus, poultry, tobacco	Infrastructure is outdated, but plans are under way to improve port and rail facilities in Matto Grosso and Bahia	Large parastatal marketing boards purchase and market agricultural commodities	Production loans offer low interest rates; budget constraints have forced export subsidies to be halved	Agricultural research has low priority in funding	Well-designed export policy has moved from highly subsidized to more market-oriented system; expanded financing
Chile	Vegetables, fruit (grapes)	Inadequate	Deficient domestic marketing structure for agricultural commodities; plans to strengthen private marketing channels	Agricultural support prices encourage expanded plantings	Low investment in agriculture; trying to expand transfer of technology	Need more production and investment incentives
Colombia	Coffee, bananas, sugar, cotton, tobacco	Undependable and insecure road and rail systems due to guerrilla activities	Deficient marketing channels; widespread black market	High interest rates and customs duties keep agricultural profit margin low	Slackening agricultural research, but regional committees may spark renewed efforts	Marketing and price stabilization funds under consideration
Venezuela	Cocoa, coffee, vegetables	Road and rail system in need of expansion and upgrading	The inefficient and corrupt Agricultural Marketing Corporation may be replaced by a series of regional marketing boards	Farmers exempt from land and income tax; export subsidies of 30 percent on non-traditional products (coffee and cocoa excluded)	Need to improve seed technology	Attempts at agricultural revitalization including expanded credit, subsidized fertilizer, and increased producer prices

Snapshot of LDC Agriculture (continued)

	Agricultural Export Crops	Transportation/Storage	Marketing Boards	Export Incentives	Agricultural Research	Agricultural Reform
Asia						
Burma	Rice, pulses	Lack of storage; rudimentary transportation; poor port facilities	State marketing boards purchase and sell all rice	State procurement is a strong disincentive to production	Largely ineffectual despite large sums targeted for research	Need to reform procurement and export policies; no increases in producer prices since 1976
China	Grain, soya, cotton, tobacco	Mostly inadequate and outdated, but limited road upgrading and more widespread port expansion are under way	State buying agencies efficiently act as export firms; rural marketing and distribution system now being developed	Moving from state procurement to direct commercial sales	Widespread research under way on plant and animal breeding, fertilizer, and pesticides	Higher procurement prices have promoted quality over quantity; responsibility system has increased efficiency and produced surplus for export
India	Tea, coffee, tobacco, cotton, rice, wheat	Inadequate	Producer cooperatives, various marketing boards, and state buying agencies handle export trade for various commodities	Cash subsidies to promote value-added products; tax rebates and grants for market promotion activities	Research on high-yield varieties and pest control; vigorous promotion of technology transfer	Adequate producer prices for major crops; fertilizer subsidies; farmers provided with basic inputs
Indonesia	Rice, rubber, sugarcane, palm oil	Limited warehouse capacity and transportation systems	National Food Agency (BULOG) acts as a minimum price guarantor	A few direct subsidy programs; new reforms will attempt to clear up corruption and inefficiencies at ports	Research focuses on disease control and hybrid seed; new efforts have resulted in higher yields	Fertilizer subsidies and floor prices offer limited production incentives; land reform may increase palm oil and coconut production
Malaysia	Palm oil, rubber, timber, cocoa	Fairly well developed; increased funding for infrastructure in 1986	State marketing agencies control agricultural marketing	National Export Council will promote trade and publicize export incentives; market promotion trips form an integral part of the aggressive export marketing policy	Sophisticated research facilities keep palm oil production and processing technology in the forefront	Export development has steadily increased despite absence of support prices and export subsidies; differential export taxes encourage value-added palm oil production
Pakistan	Rice, cotton	Well developed but deteriorating	State control of cotton marketing and forced rice procurement are strong disincentives for farmers	Fruitful manipulation of support prices has provided incentives for export-quality rice and cotton	Fundamental research in rice and cotton is required to improve yields	Subsidized credit and inputs; more appropriate incentives now focus on higher quality domestic production for export

Snapshot of LDC Agriculture (continued)

	Agricultural Export Crops	Transportation/Storage	Marketing Boards	Export Incentives	Agricultural Research	Agricultural Reform
Philippines	Coconut oil, sugar, bananas	Limited	State marketing agencies control purchase and marketing of commodities	Credit packages and price supports are in place; however, high risk and political and economic uncertainty hinder exports	More is needed—especially cultivation technology, hybrid seeds, and weed control	Until recently, poorly designed government intervention in the pricing and marketing of agricultural commodities was a disincentive to production; price controls now lifted on all basic commodities except rice
Thailand	Rice, rubber, sugar, corn	Limited	Commodity trade handled by a few large private trading firms	Trade promotion tours encourage government-to-government deals; emphasis on free market trade	Relatively advanced; oil palm plantations have introduced high-yielding Malaysian technology including tissue culture and insect propagation	Continued market-oriented approach since 1981; producer price increases have successfully motivated Thai farmers; sharp currency devaluation has increased export competitiveness



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